FIG. 1A

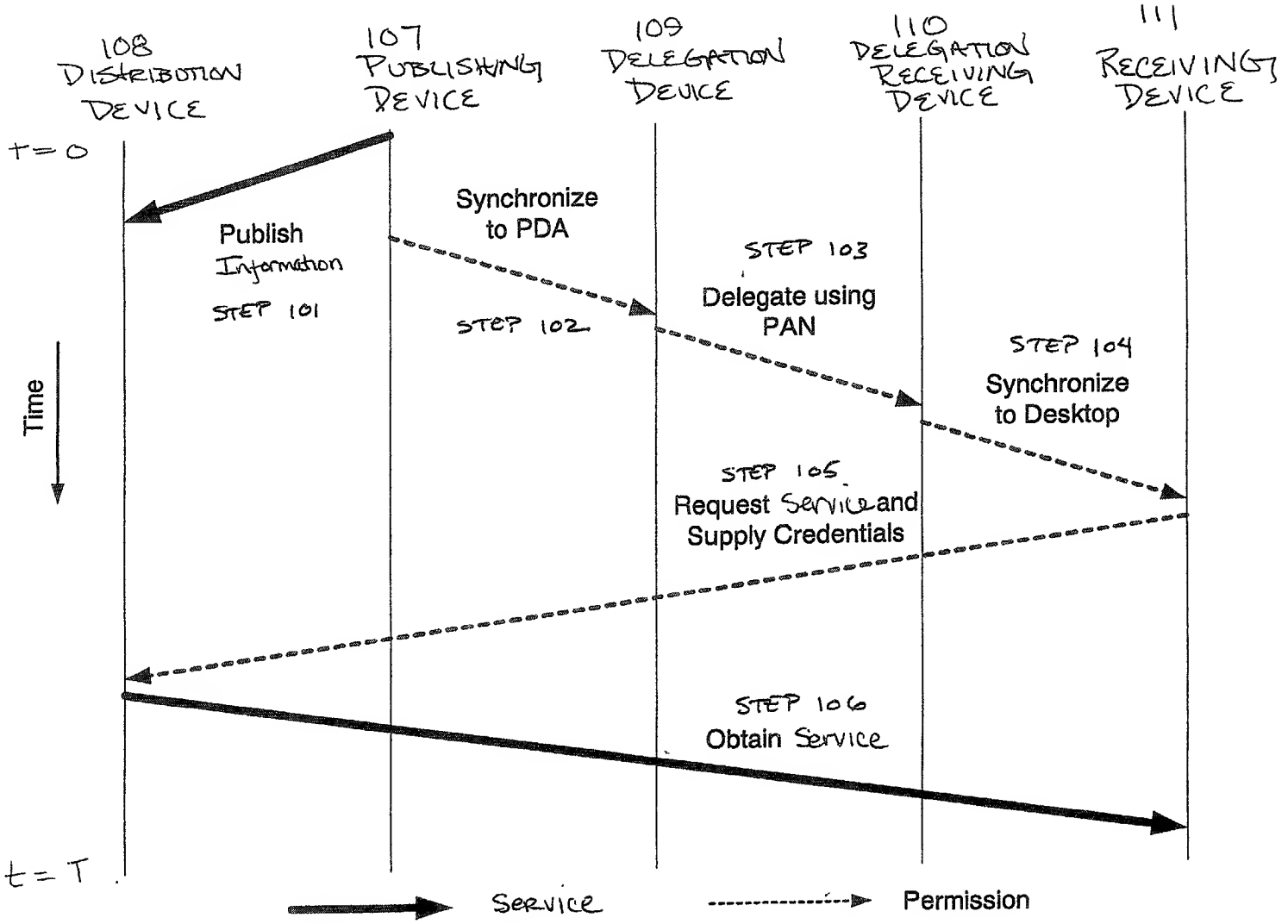
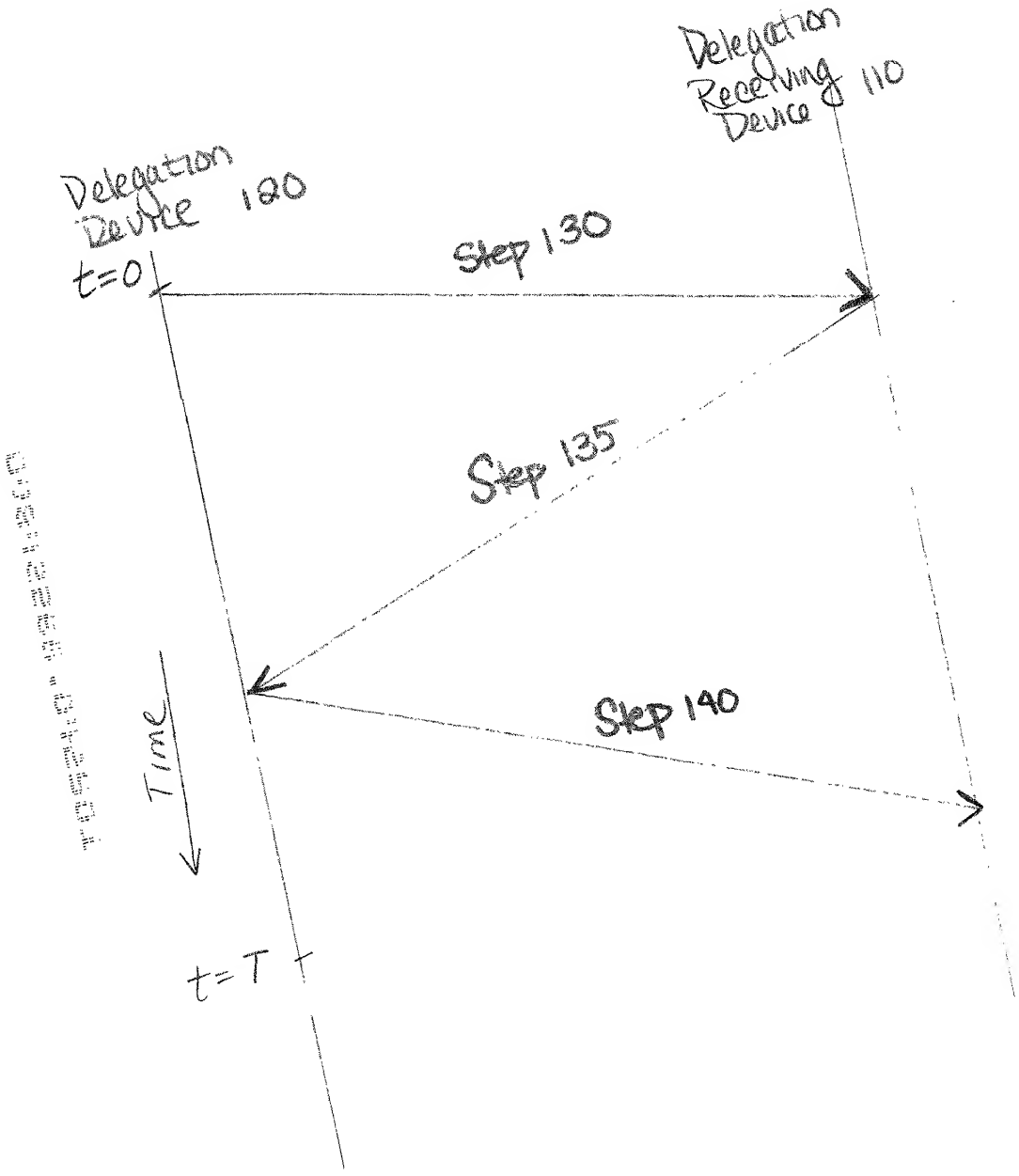

108 DISTRIBUTION DEVICE
107 PUBLISHING DEVICE
109 DELEGATION DEVICE
110 DELEGATION RECEIVING DEVICE
111 RECEIVING DEVICE
t=0
Publish Information
STEP 101
Synchronize to PDA
STEP 102
STEP 103
Delegate using PAN
STEP 104
Synchronize to Desktop
Time
STEP 105
Request Service and Supply Credentials
STEP 106
Obtain Service
t=T
Service
Permission

FIG. 1B


Delegation Receiving Device 110
Delegation Device 120
t=0
Step 130
Step 135
Step 140
Time
t=T

Data Structure Definitions in ASN.1

```
permissionChain ::= SEQUENCE OF permissionLink

permissionLink ::= SEQUENCE {
permissionLinkComponent permissionLinkComponent,
Signature OCTET STRING
}

permissionLinkComponent ::= SEQUENCE {
Name OCTET STRING,
Uri OCTET STRING,
Description OCTET STRING,
Note OCTET STRING,
Version INTEGER,
Src_p INTEGER,
Src_q INTEGER,
Src_g INTEGER,
Src_pub INTEGER,
Src_x509cert OCTET STRING,
Src_email OCTET STRING,
Subj_p INTEGER,
Subj_q INTEGER,
Subj_g INTEGER,
Subj_pub INTEGER,
Subj_x509cert OCTET STRING,
Subj_email OCTET STRING,
Delegate BOOLEAN,
Read BOOLEAN,
Write BOOLEAN,
validFrom GeneralizedTime,
validTo GeneralizedTime
}
```

FIG. 1C

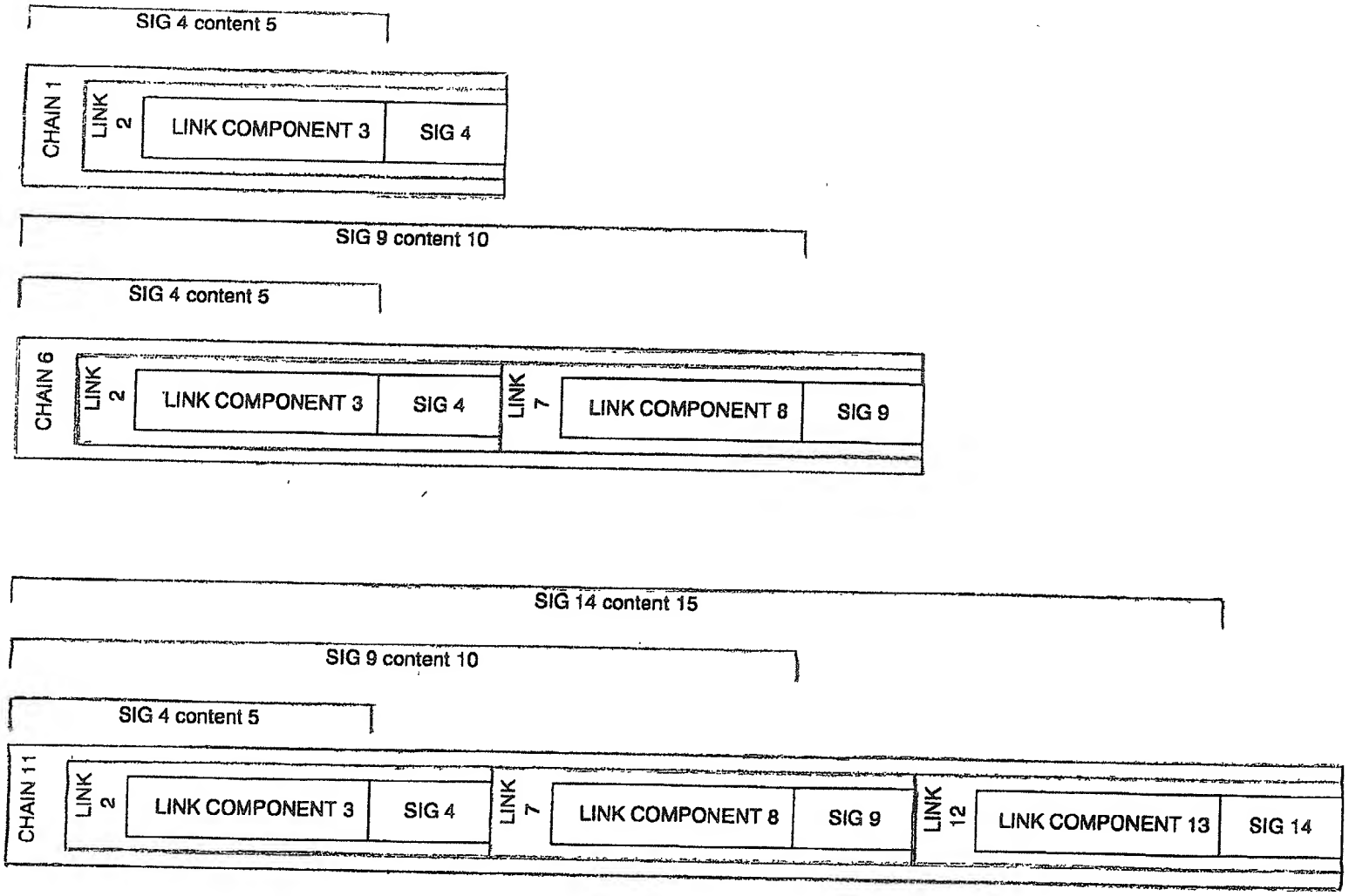

SIG 4 content 5
CHAIN 1
LINK 2
LINK COMPONENT 3
SIG 4
SIG 9 content 10
SIG 4 content 5
CHAIN 6
LINK 2
LINK COMPONENT 3
SIG 4
LINK 7
LINK COMPONENT 8
SIG 9
SIG 14 content 15
SIG 9 content 10
SIG 4 content 5
CHAIN 11
LINK 2
LINK COMPONENT 3
SIG 4
LINK 7
LINK COMPONENT 8
SIG 9
LINK 12
LINK COMPONENT 13
SIG 14

FIG. 1D

FIG. 2A

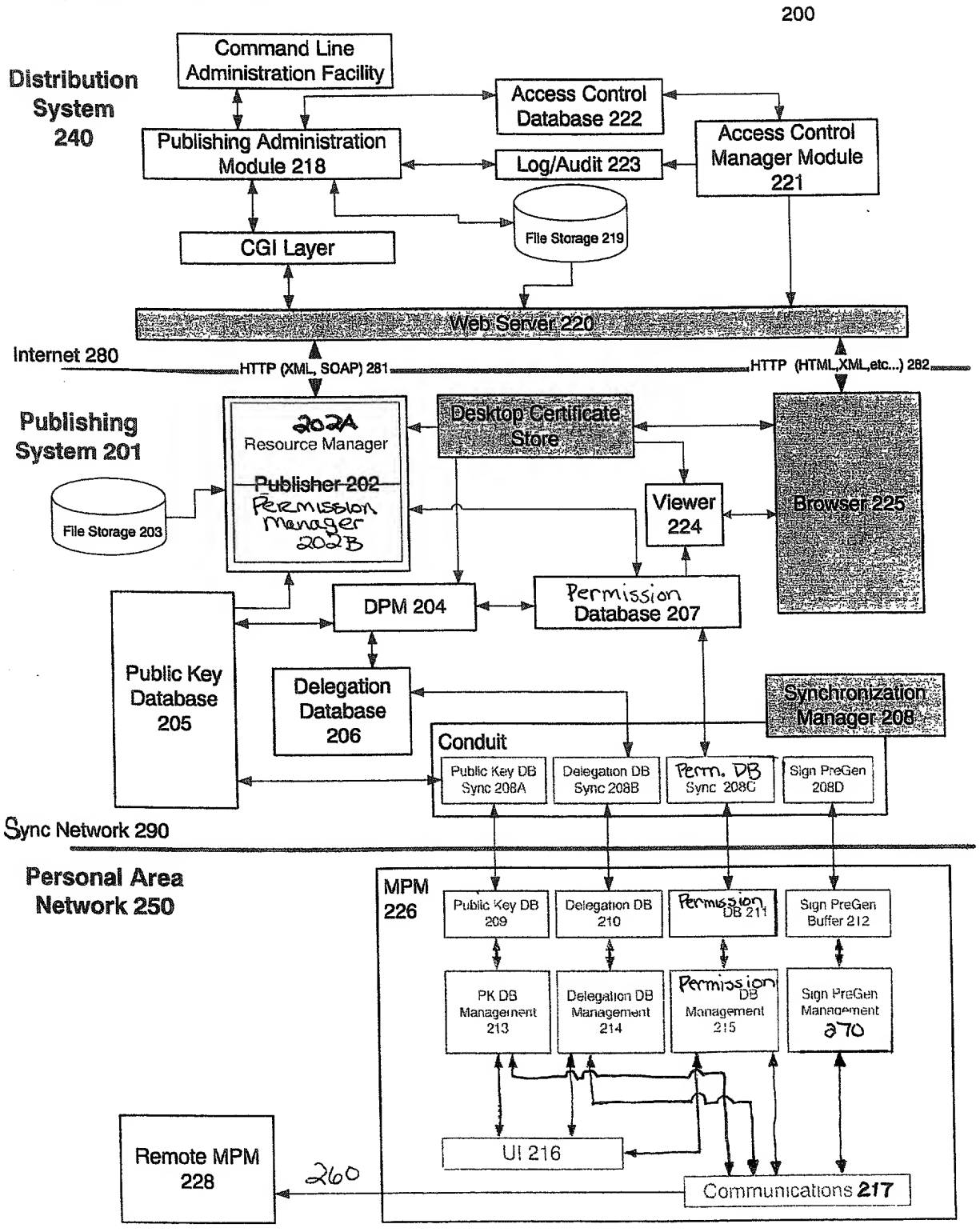

System Overview
200
Distribution System 240
Command Line Administration Facility
Publishing Administration Module 218
Access Control Database 222
Log/Audit 223
Access Control Manager Module 221
File Storage 219
CGI Layer
Web Server 220
Internet 280
HTTP (XML, SOAP) 281
HTTP (HTML,XML,etc...) 282
Publishing System 201
202A
Resource Manager
Publisher 202
Permission Manager 202B
Desktop Certificate Store
File Storage 203
Viewer 224
Browser 225
DPM 204
Permission Database 207
Public Key Database 205
Delegation Database 206
Synchronization Manager 208
Conduit
Public Key DB Sync 208A
Delegation DB Sync 208B
Perm. DB Sync 208C
Sign PreGen 208D
Sync Network 290
Personal Area Network 250
MPM 226
Public Key DB 209
Delegation DB 210
Permission DB 211
Sign PreGen Buffer 212
PK DB Management 213
Delegation DB Management 214
Permission DB Management 215
Sign PreGen Management 270
UI 216
Communications 217
Remote MPM 228
260

FIG. 2B

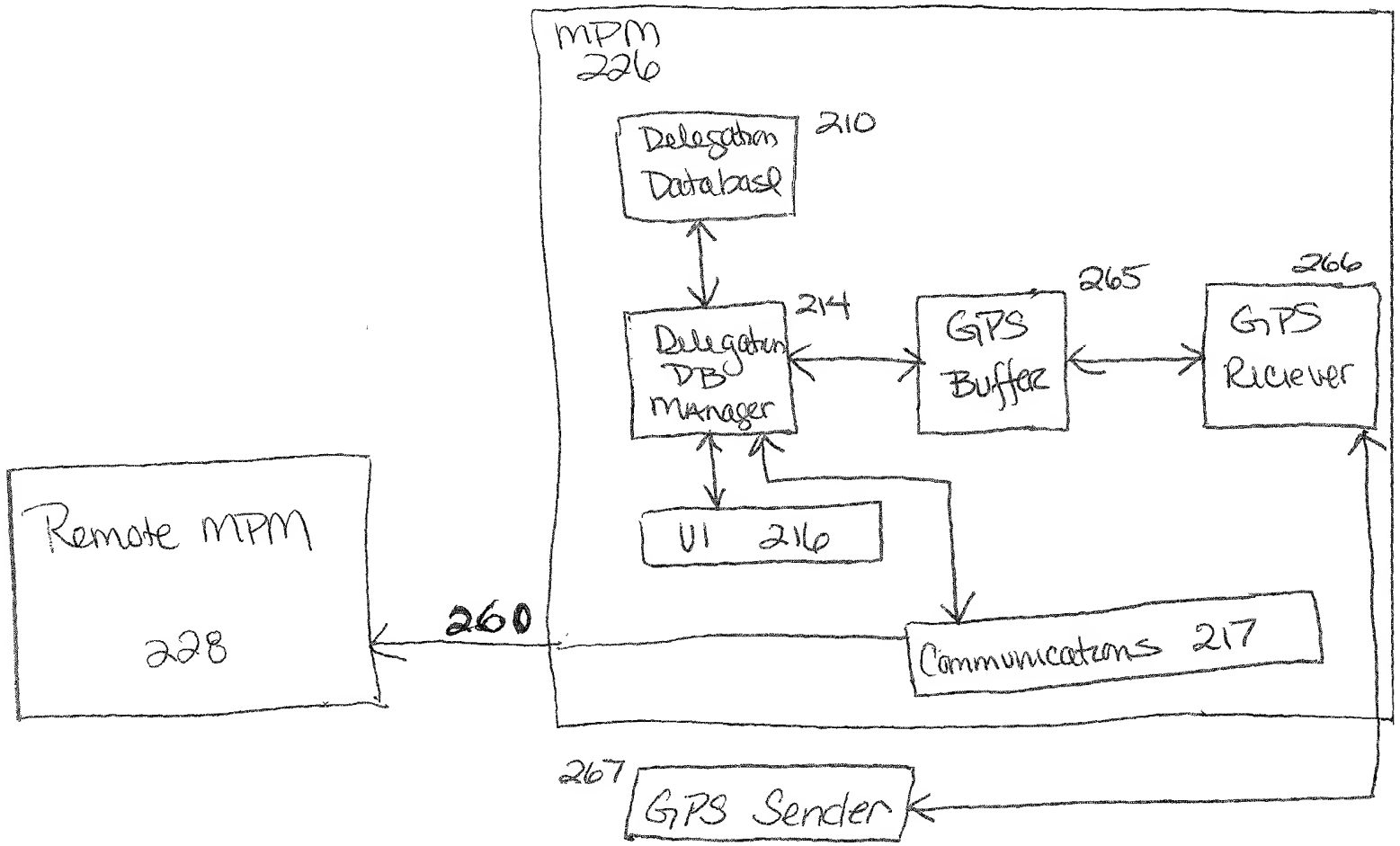
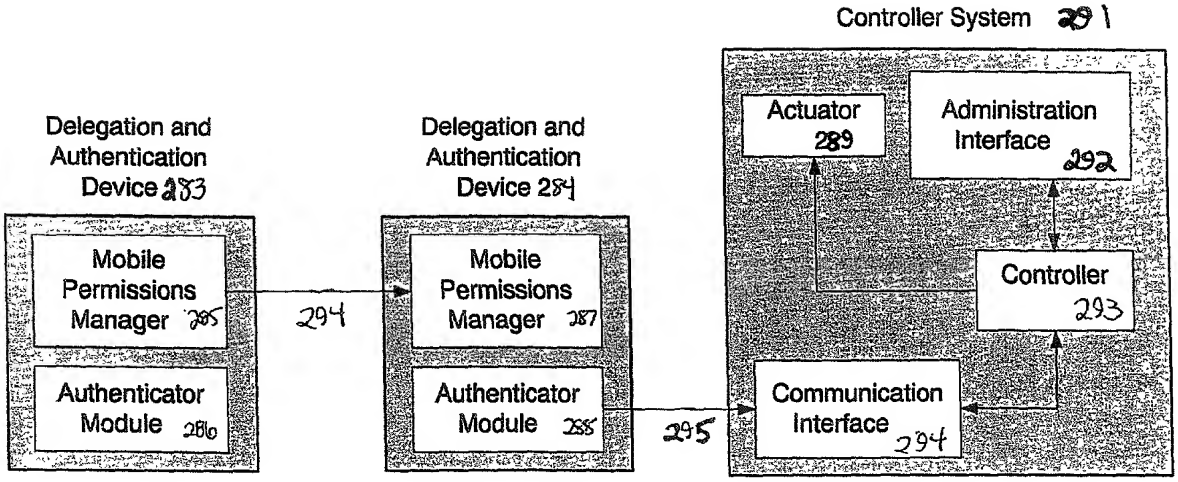

MPM
226
Delegation Database
210
Delegation DB Manager
214
GPS Buffer
265
GPS Receiver
266
UI 216
Communications 217
Remote MPM
228
260
GPS Sender
267

FIG. 2C


Controller System 291
Delegation and Authentication Device 283
Mobile Permissions Manager 285
Authenticator Module 286
294
Delegation and Authentication Device 284
Mobile Permissions Manager 287
Authenticator Module 288
295
Actuator 289
Administration Interface 292
Controller 293
Communication Interface 294

TOSHIBA SEARCH

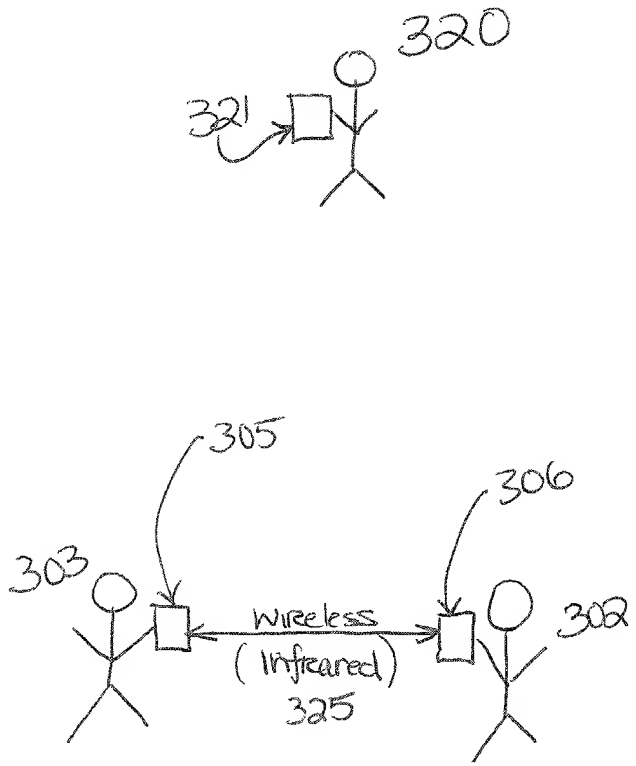


FIG. 3A

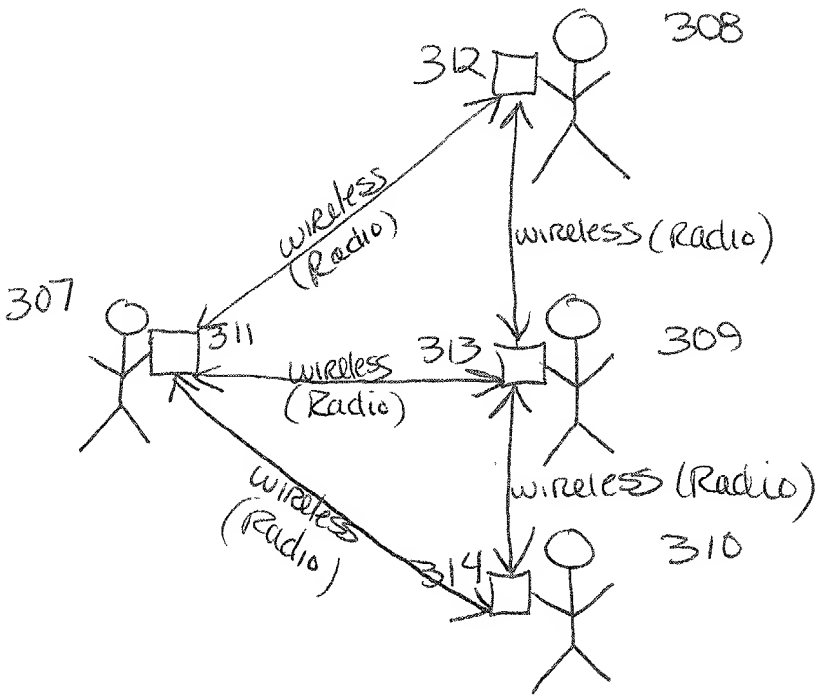


FIG. 3B

Fig. 4

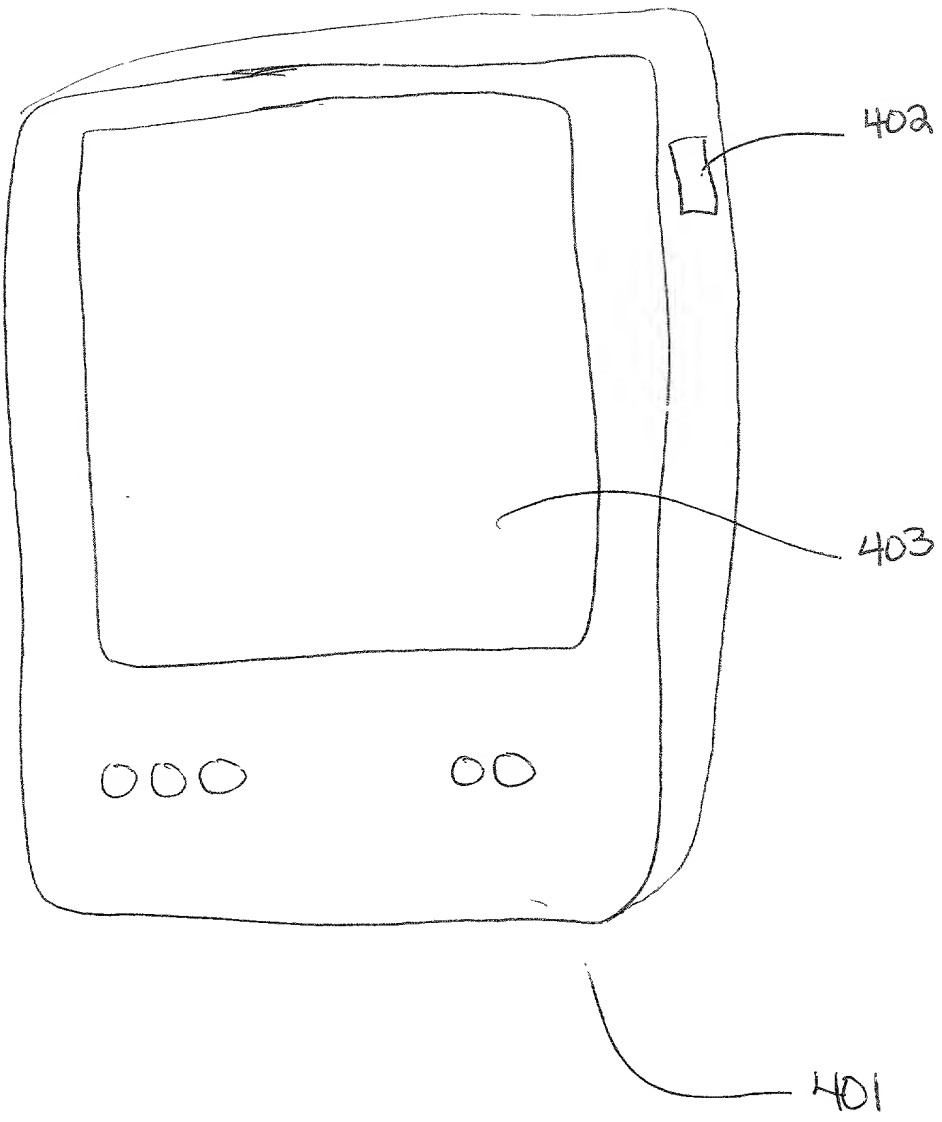


FIG. 5

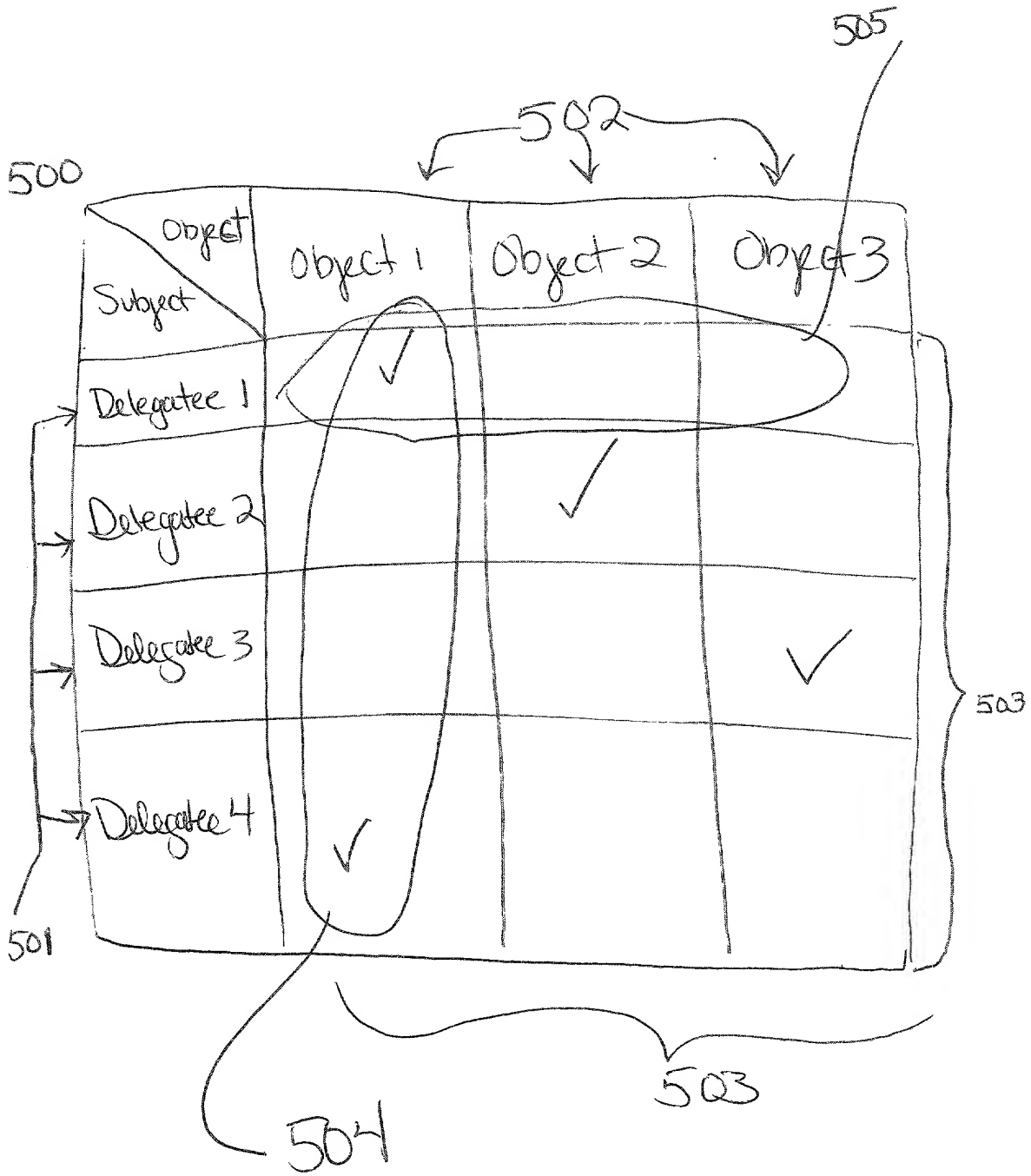
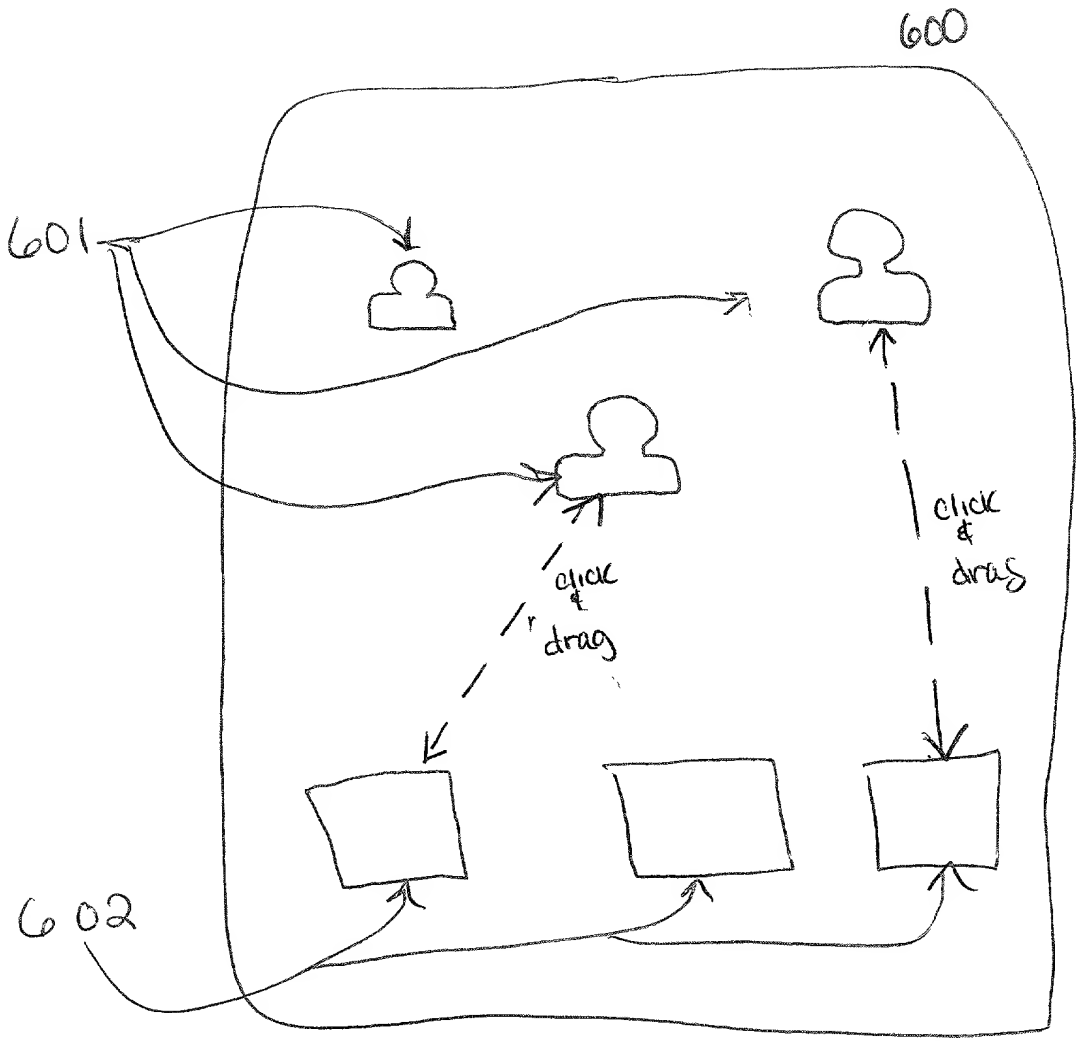

505
502
500
Object
Subject
Object 1
Object 2
Object 3
Delegatee 1
Delegatee 2
Delegatee 3
Delegatee 4
503
501
503
504

Fig. 6



Sending Permission as part of a header within an HTTP request.
(See http://www.ietf.org/rfc/rfc2616.txt).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Vchain: 50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNg1g+cwEOzzjT+
v8ywbpyuugQvj1uZSSVDfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mLOnRKrXw
WuX6gW3gR76zVuIz0y1wS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046kLpiXB+O
CloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4w1A0d9GdGAqRycOGFoXtyzpS
+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVGwnqJemvVUrH1DdhnMzYzF
ZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyFPfYYH75ONHjMdDr5qrVbSm4hK2GFZ
IVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWgrIzL+jw
Le1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgYfXdz/vXfNxjHoAiUYwt4ZNwK0+
UG78+E1rtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DUtE6JhrX6U
fR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lbxTyofETq9WofZ3u+bomL8WgchTd
/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP78DSOQwC
HMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNlNuZYq7tbxYznGNJ2VgwUPpCQppohcWmF
B1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiIEJmtzil
1Dpnt0phJpCDAPyM2XO2bJGrPnimSbUsaELQWdMmtUyczy5TDIlpqjKMNUlytlHdmN2jly
2+hHplkzgxxXKhi1I/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5sNs1TzWChjYhtFlMuCezT
Umf1LBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtPJpJHJ+Sia
/hkB9+alMZXfSkMQaBpAE7/BfzRHs+09fDTL+kBFdO0w0fvkTo9AlfVF99wiAJ0hZt7q+e
GWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQotzjdFX
1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8hHDxg1uK
RaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S2OAfj99QjmszP3gQ64Pw+EakfS+lYQYbauY9
Z+8bRf+G8JnhRZIvcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtzUR4rv+e
qjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
…
```

FIG. 7.

Sending the permission as part of a "cookie" within an HTTP request (see http://www.ietf.org/rfc/rfc2616.txt and http://www.ietf.org/rfc/rfc2109.txt).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Cookie: Vchain=50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNg1g+cw
EOzzjT+v8ywbpyuugQvj1uZSSVDfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mL
OnRKrXwWuX6gW3gR76zVuIz0y1wS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH81046k
LpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4wlA0d9GdGAqRycOGF
oXtyzpS+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVGwnqJemvVUrH1DD
hnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyFPfYYH75ONHjMdDr5qrVbSm
4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWg
rIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgYfXdz/vXfNxjHoAiUYwt
4ZNwK0+UG78+E1rtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DutE
6JhrX6UfR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lbxTyofETq9WofZ3u+bomL
8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP7
8DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNlNuZYq7tbxYznGNJ2VgwUPpCQp
pohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiI
EJmtzil1Dpnt0phJpCDAPyM2XO2bJGrPnimSbUsaELQWdMmtUyczy5TDIlpqjKMNU1yt1H
dmN2jly2+hHplkzgxxXKhi1I/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5sNs1TzWChjYhtF
lMuCezTUmf1LBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtPJp
JHJ+SIa/hkB9+alMZXfSkMQaBpAE7/BfzRHs+09fDTL+kBFdO0w0fvkTo9AlfVF99wiAJ0
hZt7q+eGWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQ
otzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8h
HDxg1uKRaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S2OAfj99QjmszP3gQ64Pw+EakfS+1Y
QYbauY9Z+8bRf+G8JnhRZIvcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtz
UR4rv+eqjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
...
```

FIG. 8

Sending the permissions as part of a URL

```
http://www.websitexyz.com/resource/?Vchain=50U+F61olMMJzRmZs6QNRhx1UE3a
rtX4ax56AJdJxYR7dzyPNg1g+cwEOzzjT+v8ywbpyuugQvj1uZSSVDfkbje/C+NV8sLfp5d
3eaTykzeP+siJxl7wg3njzn2mLOnRKrXwWuX6gW3gR76zVuIz0y1wS9bZzSiu+ImN/SaHRS
3eqBFPL7Ye0lJzin4jH8l046kLpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybf
SXPkJx4w1A0d9GdGAqRycOGFoXtyzpS+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPv
uevICZHVGwnqJemvVUrH1DDhnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyF
PfYYH75ONHjMdDr5qrVbSm4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3
hpKa5Pd+NZELIwQ4FW1WgrIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbg
YfXdz/vXfNxjHoAiUYwt4ZNwK0+UG78+E1rtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10
FeCHZ00c16a4M82DUtE6JhrX6UfR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lbxT
yofETq9WofZ3u+bomL8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3
mzp48n8wCq8qH2JP78DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNlNuZYq7tbx
YznGNJ2VgwUPpCQppohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3
mvDXSAJ8Wx66XiIEJmtzil1Dpnt0phJpCDAPyM2XO2bJGrPnimSbUsaELQWdMmtUyczy5TD
IlpqjKMNUlytlHdmN2jly2+hHplkzgxxXKhi1I/JtC97X2GBbm7nlUnICG6sAbxq61BHX5s
Ns1TzWChjYhtFlMuCezTUmf1LBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUz
wnt3/PJwtPJpJHJ+SIa/hkB9+alMZXfSkMQaBpAE7/BfzRHs+09fDTL+kBFdO0w0fvkTo9A
1fVF99wiAJ0hZt7q+eGWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv
09iA8i28gQotzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a
75Jxyoa8hHDxg1uKRaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S2OAfj99QjmszP3gQ64Pw+
EakfS+lYQYbauY9Z+8bRf+G8JnhRZIvcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn151/a
8SraFtzUR4rv+eqjQyE=
```

FIG. 9

Fig. 10

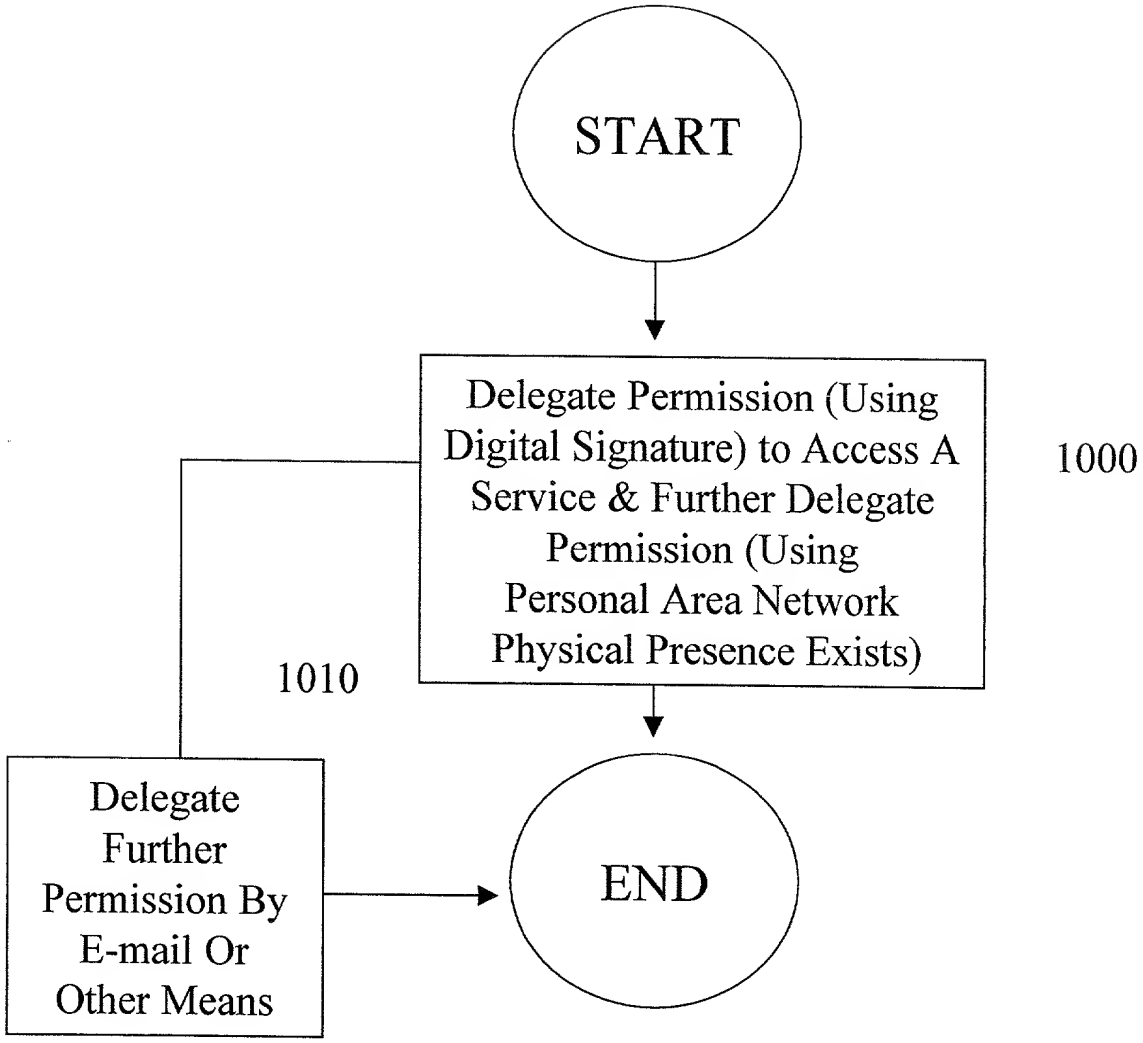

START
Delegate Permission (Using Digital Signature) to Access A Service & Further Delegate Permission (Using Personal Area Network Physical Presence Exists)
1000
1010
Delegate Further Permission By E-mail Or Other Means
END

Fig. 11

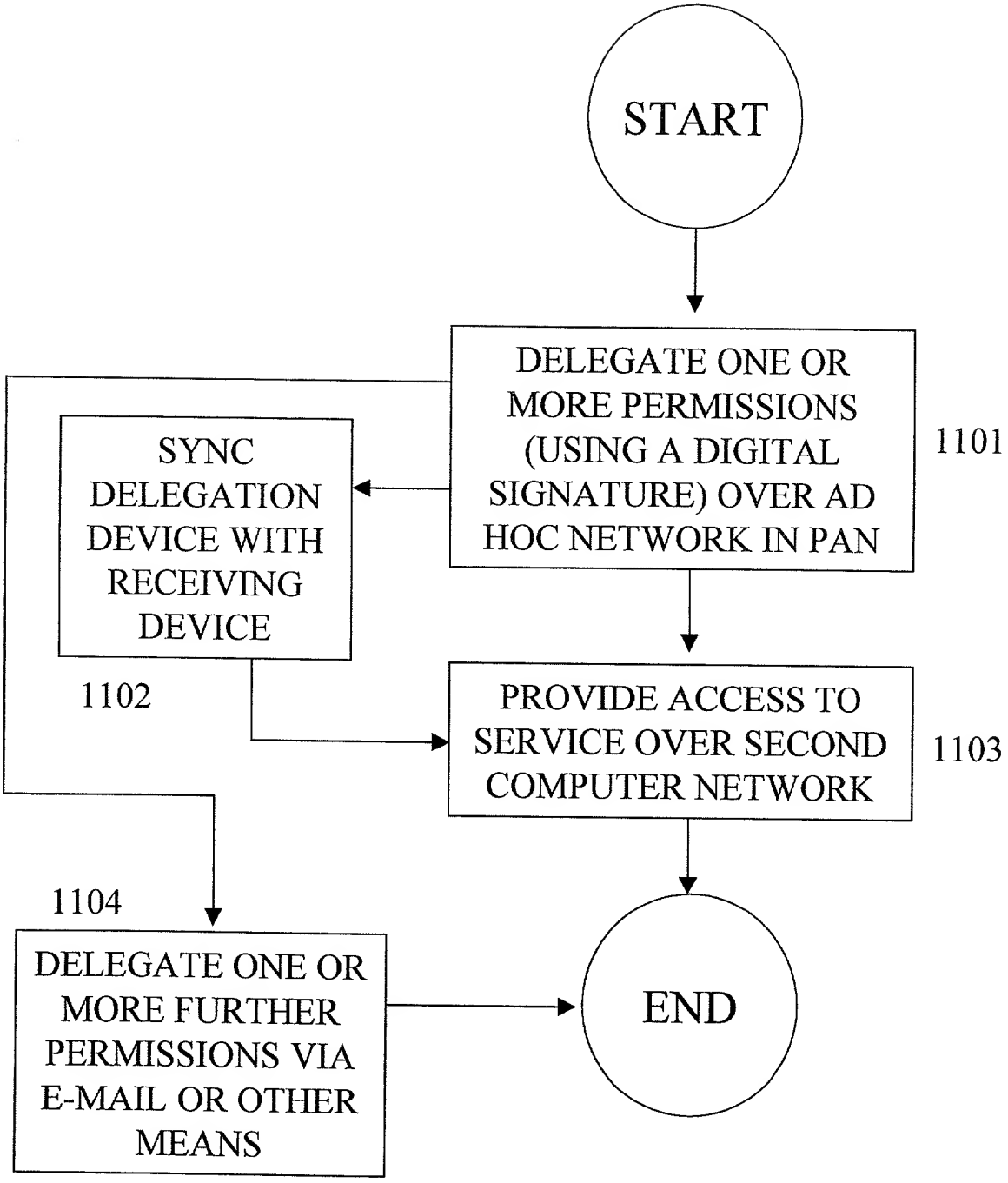

START
DELEGATE ONE OR MORE PERMISSIONS (USING A DIGITAL SIGNATURE) OVER AD HOC NETWORK IN PAN
1101
SYNC DELEGATION DEVICE WITH RECEIVING DEVICE
1102
PROVIDE ACCESS TO SERVICE OVER SECOND COMPUTER NETWORK
1103
1104
DELEGATE ONE OR MORE FURTHER PERMISSIONS VIA E-MAIL OR OTHER MEANS
END

Fig. 12

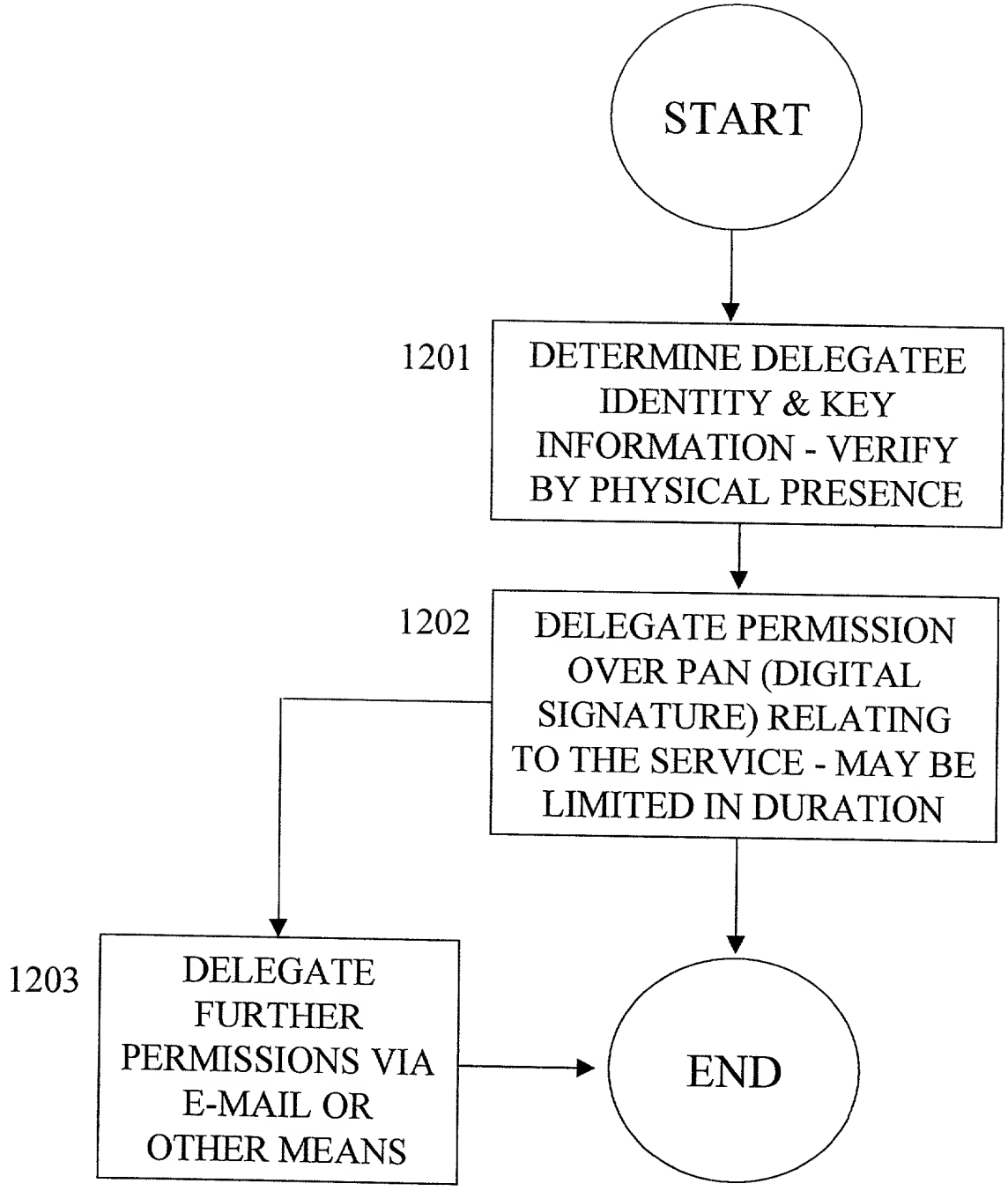

START
1201
DETERMINE DELEGATEE IDENTITY & KEY INFORMATION - VERIFY BY PHYSICAL PRESENCE
1202
DELEGATE PERMISSION OVER PAN (DIGITAL SIGNATURE) RELATING TO THE SERVICE - MAY BE LIMITED IN DURATION
1203
DELEGATE FURTHER PERMISSIONS VIA E-MAIL OR OTHER MEANS
END

Fig. 13

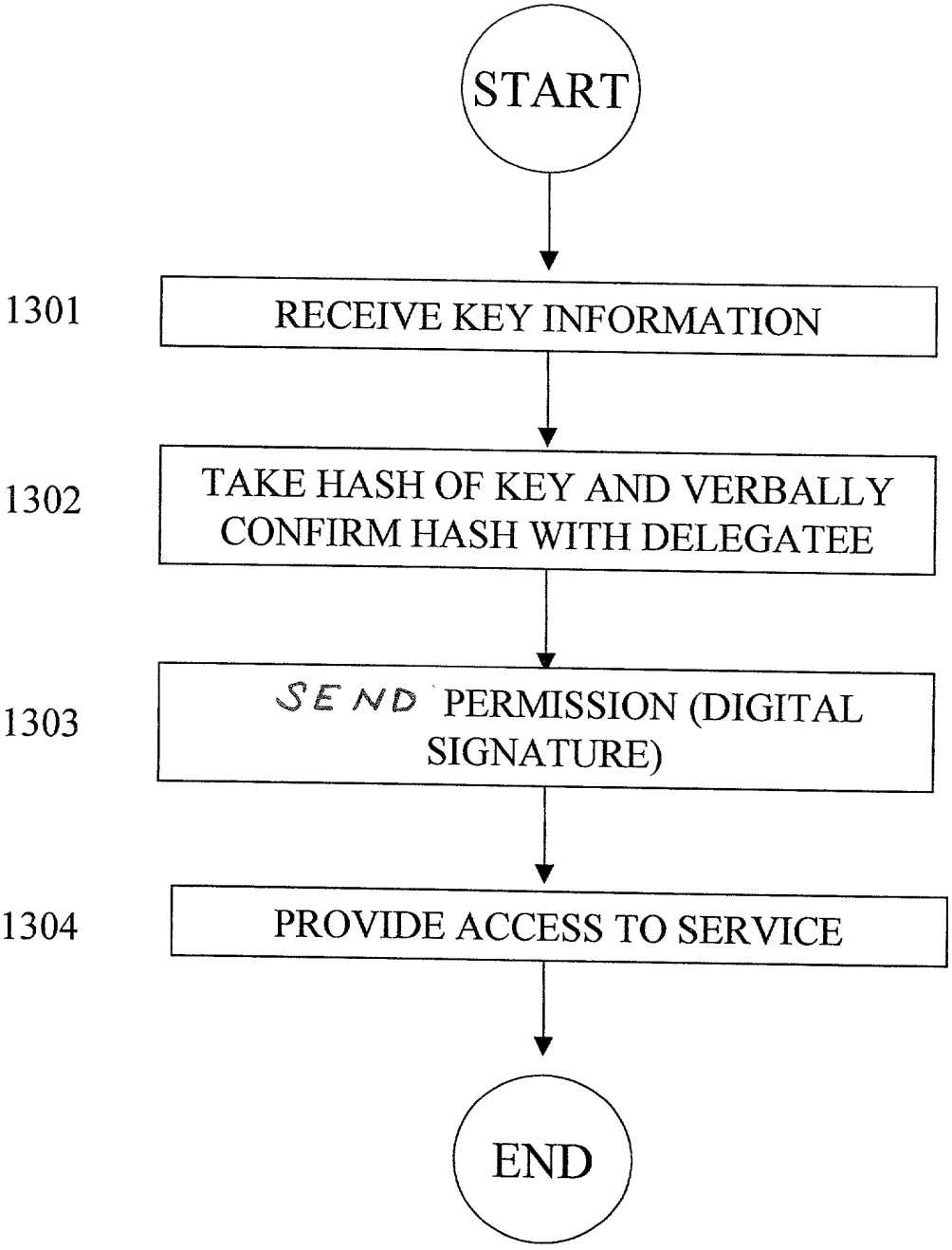

START
1301
RECEIVE KEY INFORMATION
1302
TAKE HASH OF KEY AND VERBALLY CONFIRM HASH WITH DELEGATEE
1303
SEND PERMISSION (DIGITAL SIGNATURE)
1304
PROVIDE ACCESS TO SERVICE
END

Fig. 14

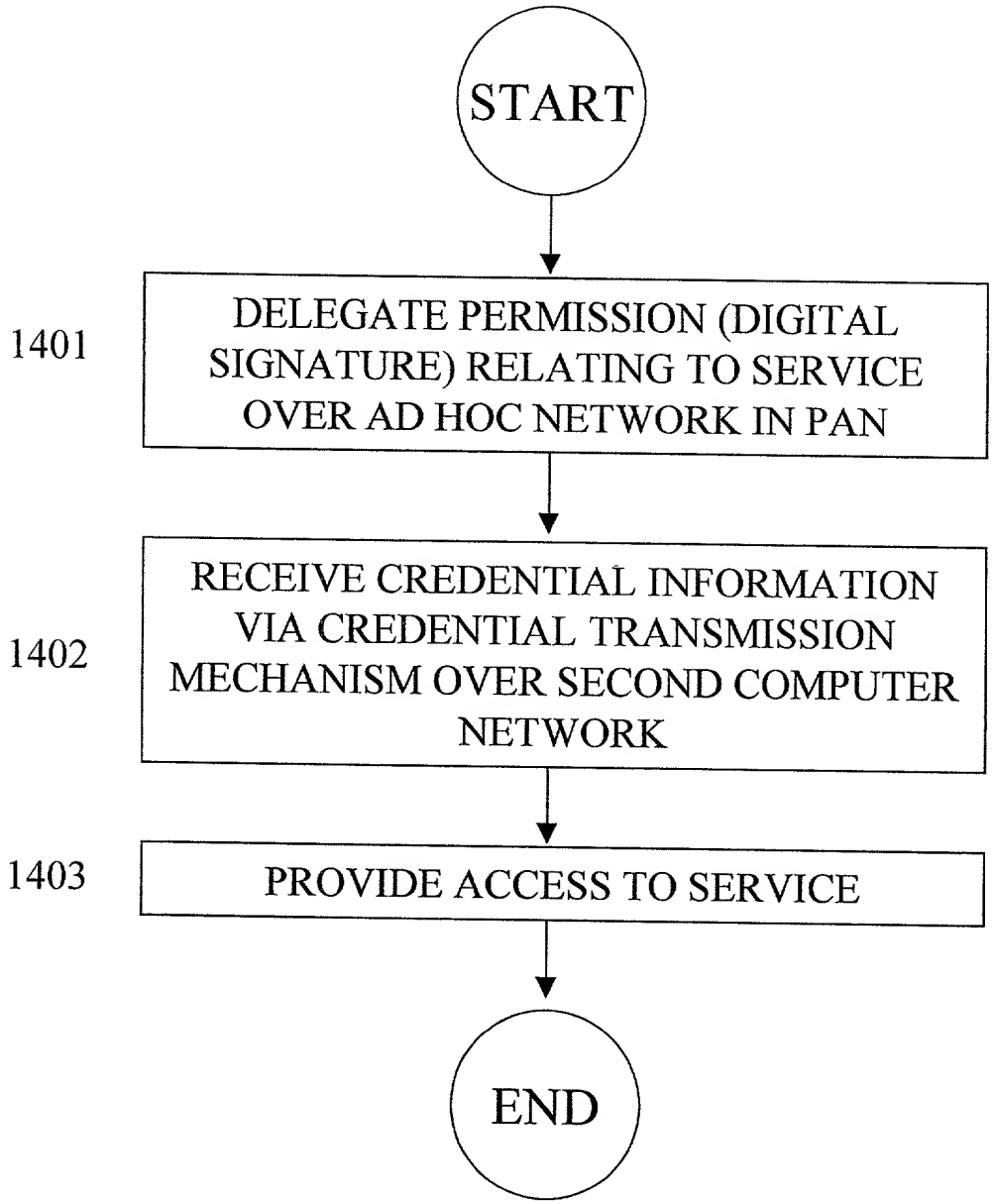

START
1401
DELEGATE PERMISSION (DIGITAL SIGNATURE) RELATING TO SERVICE OVER AD HOC NETWORK IN PAN
1402
RECEIVE CREDENTIAL INFORMATION VIA CREDENTIAL TRANSMISSION MECHANISM OVER SECOND COMPUTER NETWORK
1403
PROVIDE ACCESS TO SERVICE
END

Fig. 15

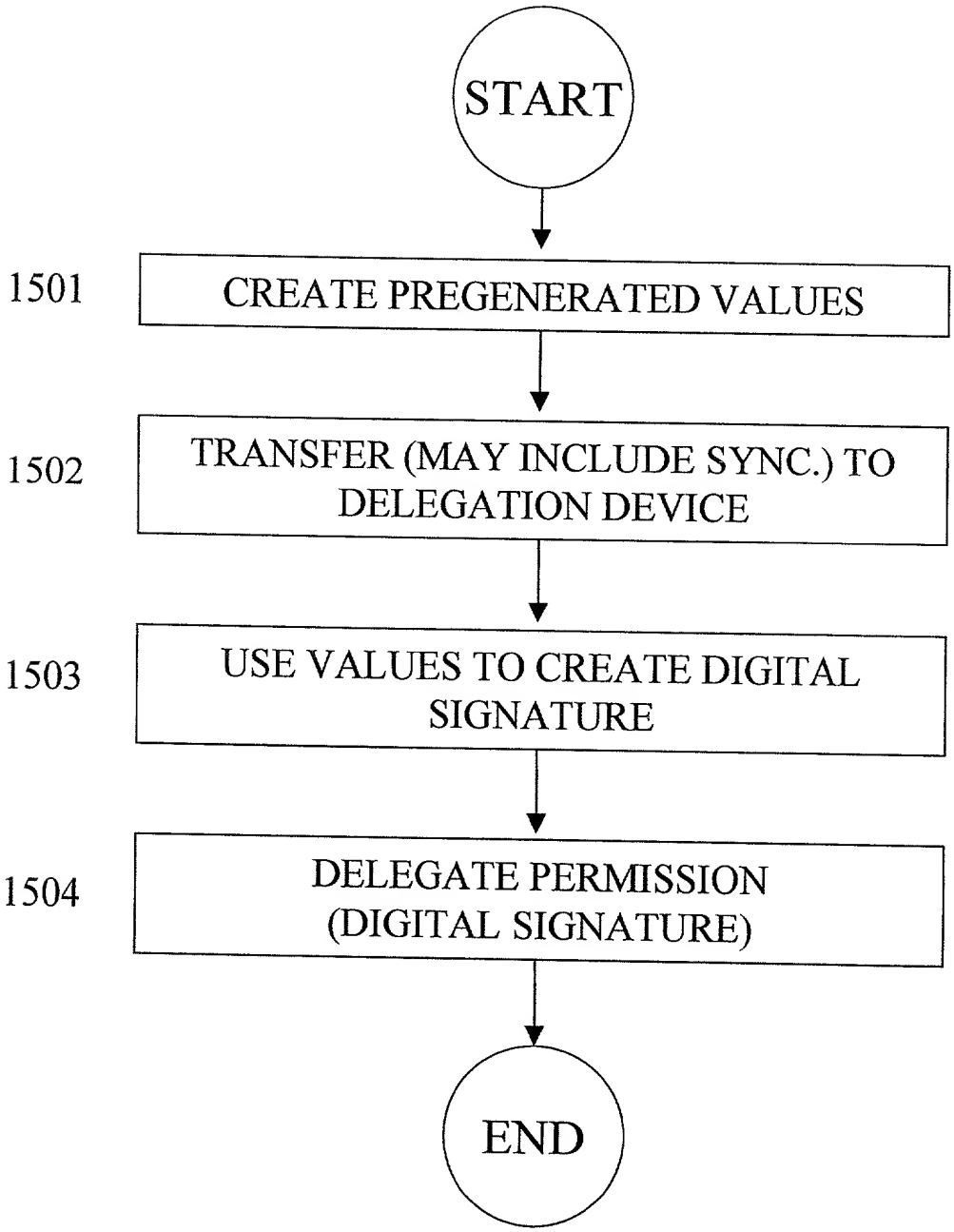

START
1501
CREATE PREGENERATED VALUES
1502
TRANSFER (MAY INCLUDE SYNC.) TO DELEGATION DEVICE
1503
USE VALUES TO CREATE DIGITAL SIGNATURE
1504
DELEGATE PERMISSION (DIGITAL SIGNATURE)
END

Fig. 16

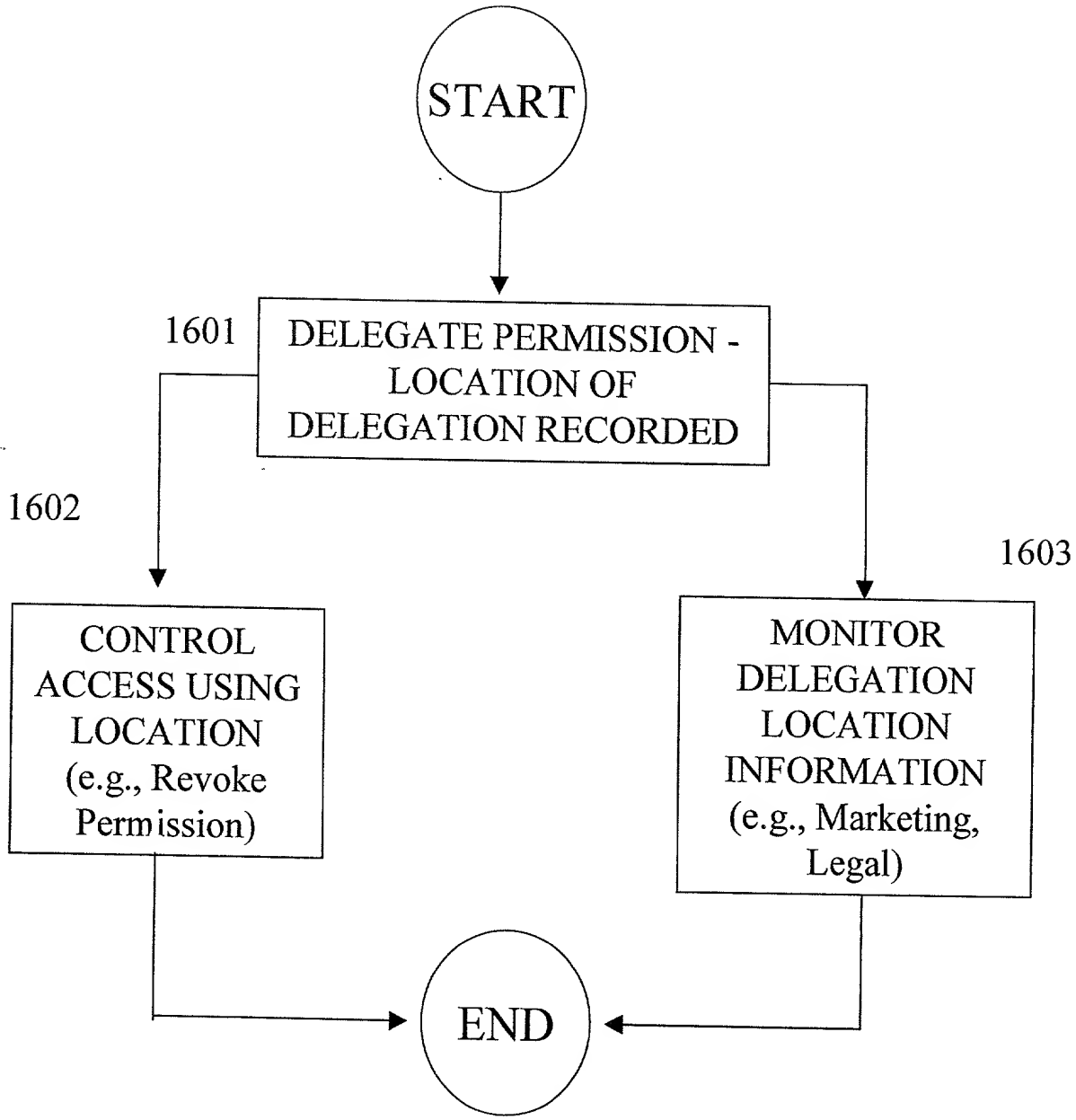
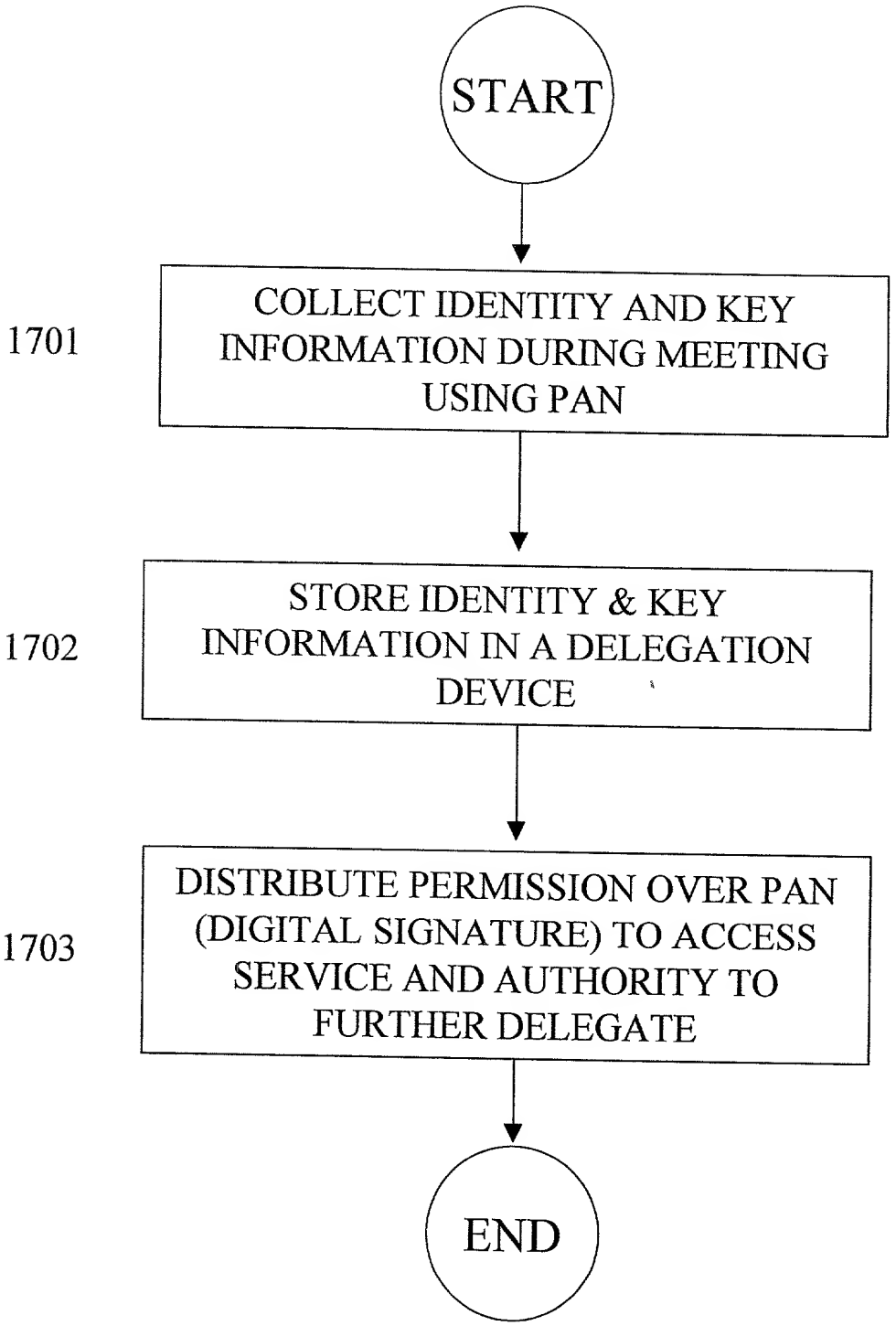

START
1601
DELEGATE PERMISSION - LOCATION OF DELEGATION RECORDED
1602
CONTROL ACCESS USING LOCATION (e.g., Revoke Permission)
1603
MONITOR DELEGATION LOCATION INFORMATION (e.g., Marketing, Legal)
END

Fig. 17


START
1701
COLLECT IDENTITY AND KEY INFORMATION DURING MEETING USING PAN
1702
STORE IDENTITY & KEY INFORMATION IN A DELEGATION DEVICE
1703
DISTRIBUTE PERMISSION OVER PAN (DIGITAL SIGNATURE) TO ACCESS SERVICE AND AUTHORITY TO FURTHER DELEGATE
END